STN - STRUCTURE SEARCH 10/19-04

10/849,696

=> d ibib abs hitstr 1-16

L5 ANSWER 1 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:466693 CAPLUS
DOCUMENT NUMBER: 139:36672
TITLE: Preparation of codeine from morphine
INVENTOR(S): Hill, Lloyd P.
PATENT ASSIGNEE(S): Mallinckrodt Inc., USA
SOURCE: U.S., 4 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6579985	B1	20030617	US 2002-274702	20021021
WO 2004037826	A2	20040506	WO 2003-US32698	20031014
WO 2004037826	A3	20040701		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

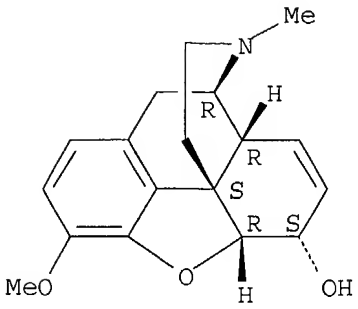
PRIORITY APPLN. INFO.: US 2002-274702 A 20021021
OTHER SOURCE(S): CASREACT 139:36672

AB An improved process for the preparation of codeine from morphine comprises the steps of (a) reacting morphine with a methylating agent in the presence of a hydrocarbon solvent at a temperature of 100 to 215° C. under reflux conditions such that approx. 50% or more of the hydrocarbon solvent is returned to the reaction mixture to substantially avoid the formation of codeine Me ether; and (b) recovering codeine from the reaction mixture The process may include step (a) above followed by (b) cooling the reaction mixture to approx. 85° C. and adding water to terminate the reaction; (c) raising the pH of the reaction mixture to approx. 11; (d) separating the hydrocarbon solvent phase containing codeine and dimethylaniline; and (e) adding a dilute mineral or organic acid and approx. 6 to 7 times the volume of water for each volume of hydrocarbon solvent to sep. dimethylaniline and codeine.

IT **76-57-3P**, Codeine
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(process for preparation of codeine from morphine)

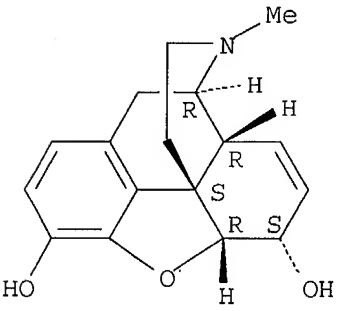
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(process for preparation of codeine from morphine)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:946115 CAPLUS
DOCUMENT NUMBER: 138:16594
TITLE: Sustained-release analgesic compounds
INVENTOR(S): Ashton, Paul; Smith, Thomas J.; Cynkowski, Tadeusz; Cynkowska, Grazyna; Mickunas, Edmund
PATENT ASSIGNEE(S): Control Delivery Systems, USA
SOURCE: PCT Int. Appl., 54 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002098427	A2	20021212	WO 2002-US17613	20020605
WO 2002098427	A3	20030220		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,

	UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,					
	CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,					
	BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
US 2003022876		A1	20030130	US 2002-162216		20020605
NZ 529661		A	20031219	NZ 2002-529661		20020605
EP 1399161		A2	20040324	EP 2002-734669		20020605
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,					
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR					
BR 2002010179		A	20040427	BR 2002-10179		20020605
PRIORITY APPLN. INFO.:				US 2001-295556P	P	20010605
				WO 2002-US17613	W	20020605

OTHER SOURCE(S): MARPAT 138:16594

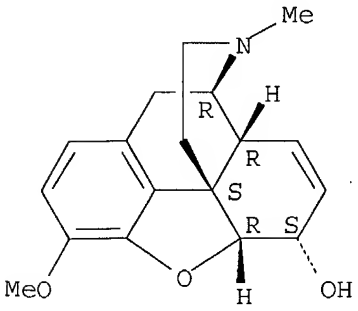
AB A pharmaceutically active inventive compound comprises two independently active analgesic moieties covalently conjoined through a physiol. labile linker. A preferred embodiment comprises an opioid, such as morphine, covalently linked to at least one analgesic compound selected from the group consisting of an opioid or a no-opioid compound through a physiol. labile linker. Suitable covalent linkers are covalently bonded to the two independently active analgesic compds. through one or more lactone, lactam, or sulfonamido linkages. Suitable linkers include endogenous carboxylate, amido, and sulfonamido moieties, and exogenous moieties that form the aforementioned lactone, lactam or sulfonamido linkages.

IT **76-57-3DP**, Codeine, conjugates with analgesics
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
(sustained-release analgesic compds.)

RN 76-57-3 CAPLUS

CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

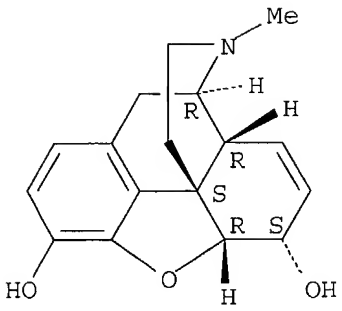


IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(sustained-release analgesic compds.)

RN 57-27-2 CAPLUS

CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



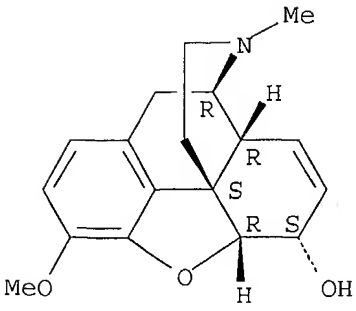
L5 ANSWER 3 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:276043 CAPLUS
DOCUMENT NUMBER: 136:295249
TITLE: Resin and its use in converting morphine to codeine
INVENTOR(S): Corcoran, Robert C.
PATENT ASSIGNEE(S): USA
SOURCE: PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002028917	A2	20020411	WO 2001-US31252	20011005
WO 2002028917	A3	20020926		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2001096651	A5	20020415	AU 2001-96651	20011005
US 2002082357	A1	20020627	US 2001-970860	20011005
PRIORITY APPLN. INFO.:			US 2000-238697P P	20001006
			WO 2001-US31252 W	20011005

AB A resin, useful as a methylating agent, comprises a solid support and cationic methylated sulfonium, sulfoxonium, selenonium or phosphonium salts immobilized on the solid support. Amberlite A 26 (hydroxide form) was mixed with 3-methylthiophenol, heated in xylene, MeOH and dimethylsulfate was added, the resin was washed in aqueous NaCl and aqueous NaOH, and rinsed with MeOH to give methylsulfonium methylation resin in its hydroxide/methoxide form.

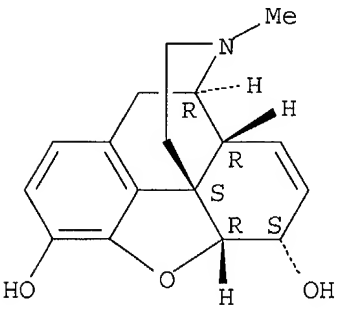
IT **76-57-3P**, Codeine
RL: IMF (Industrial manufacture); PUR (Purification or recovery); **PREP (Preparation)**
(methylation resin for converting morphine to codeine)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation resin for converting morphine to codeine)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



L5 ANSWER 4 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:453959 CAPLUS
DOCUMENT NUMBER: 127:65986
TITLE: Solid-phase synthesis of codeine from morphine
INVENTOR(S): Corcoran, Robert C.; Ma, Junning
PATENT ASSIGNEE(S): Board of Regents of the University and Community College System of Nevada, USA; Corcoran, Robert C.; Ma, Junning
SOURCE: PCT Int. Appl., 14 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9719082	A1	19970529	WO 1996-US18791	19961121

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML,

MR, NE, SN, TD, TG

US 5981750	A	19991109	US 1996-753040		19961119
AU 9711624	A1	19970611	AU 1997-11624		19961121
IN 186312	A	20010804	IN 1996-DE2564		19961121
US 6204337	B1	20010320	US 1999-390285		19990903
PRIORITY APPLN. INFO.:			US 1995-7419P	P	19951121
			US 1996-753040	A3	19961119
			WO 1996-US18791	W	19961121

OTHER SOURCE(S): CASREACT 127:65986

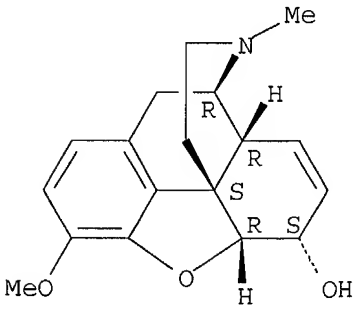
AB A methylation resin comprising methyl(dialkyl)anilinium salts or methyl(diaryl)anilinium salts covalently bonded to the resin was prepared and used in the solid-phase synthesis of codeine from morphine. Accordingly, the specification describes a process for methylating morphine to form codeine by loading morphine onto a methylation resin comprising methyl(dialkyl)anilinium salts or methyl(diaryl)anilinium salts covalently bonded to the resin; contacting the loaded resin with sufficient hydrocarbon or ether solvent to cover the loaded resin; and heating the loaded resin in the hydrocarbon or ether solvent under sufficient conditions to form codeine. The methylating resin may be used to methylate phenolic moieties on other compds. and to esterify compds. containing carboxylic acid moieties.

IT **76-57-3P**, Codeine
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(solid-phase synthesis of codeine from morphine)

RN 76-57-3 CAPLUS

CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

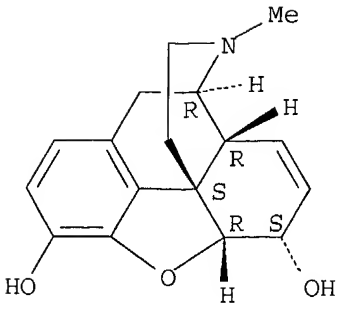


IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(solid-phase synthesis of codeine from morphine)

RN 57-27-2 CAPLUS

CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



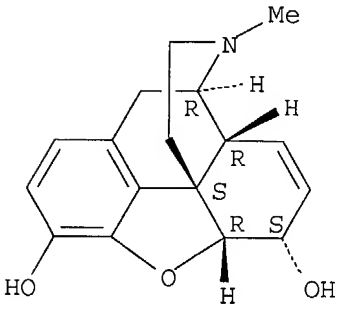
L5 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:717793 CAPLUS
DOCUMENT NUMBER: 126:19081
TITLE: Preparation of phenyltrimethylammonium chloride
AUTHOR(S): Nguyen, Huu Dinh
CORPORATE SOURCE: Hanoi, Vietnam
SOURCE: Hoa Hoc & Cong Nghiep Hoa Chat (1996), (1), 22-24
CODEN: HHHCF4; ISSN: 0866-7004
PUBLISHER: Hoi Hoa Hoc Viet Nam
DOCUMENT TYPE: Journal
LANGUAGE: Vietnamese

AB PhN+Me3 Cl- was prepared in 78% yield by reaction of PhNMe2 with MeCl in absolute ethanol at 120° C under 20-25 atm during 12 h. The product was used to methylate morphine to codeine.

IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(preparation of phenyltrimethylammonium chloride for methylation of morphine)

RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

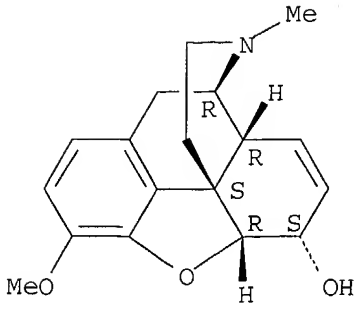
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**, Codeine
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of phenyltrimethylammonium chloride for methylation of morphine)

RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



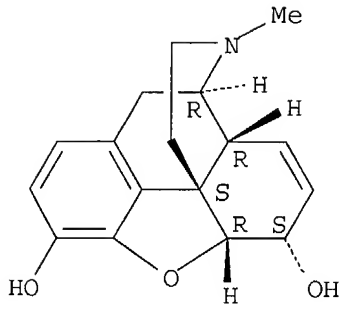
L5 ANSWER 6 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:483714 CAPLUS
DOCUMENT NUMBER: 121:83714
TITLE: Process for purifying codeine prepared by methylation of morphine
INVENTOR(S): Kmetty, Gejza; Varga, Ivan; Kacina, Roman; Gomory, Juraj
PATENT ASSIGNEE(S): SLOVAKOFARMA s. p., Slovakia
SOURCE: Czech., 3 pp.
CODEN: CZXXA9
DOCUMENT TYPE: Patent
LANGUAGE: Slovak
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 277517	B6	19930317	CS 1990-6197	19901212
PRIORITY APPLN. INFO.:			CS 1990-6197	19901212

AB Codeine (I), prepared by methylation of morphine, is freed of known contaminants as follows. A solution of crude I in an organic solvent (especially PhMe) is extracted by an aqueous solution of an inorg. or a C1-2 organic acid (pH 5.4-7, preferably 6.0-6.8), and then the separated aqueous layer containing I is extracted with a chlorinated organic solvent (especially C2HCl3). I base is then precipitated from the aqueous layer by raising the pH to 8-9, and after separation from the layer is dissolved in EtOH and treated with aqueous or aqueous-alc. H3PO4 to pH 4-4.5. The resulting crystalline I phosphate is separated, and from it is liberated pure I base. In a large-scale example, 35 kg I crude base in PhMe was extracted into aqueous 3.5% formic acid, which was then extracted with C2HCl3, treated with active C, and neutralized to precipitate 32 kg I base, free of methylation byproducts. This was dissolved in EtOH and treated with aqueous 40% H3PO4, to give crystalline I.H3PO4 satisfying German pharmacopeial parameters for purity and solution color, with content 99.95%.

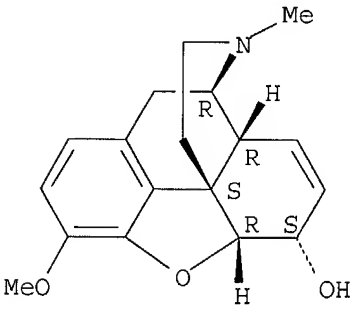
IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, purification of codeine from)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



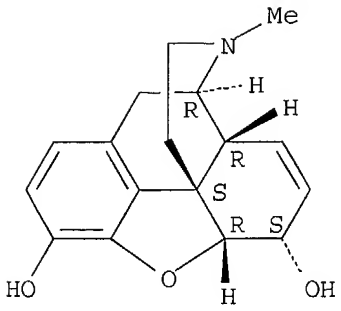
IT **76-57-3P**, Codeine
RL: PUR (Purification or recovery); **PREP (Preparation)**
(purification of, from methylation of morphine)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



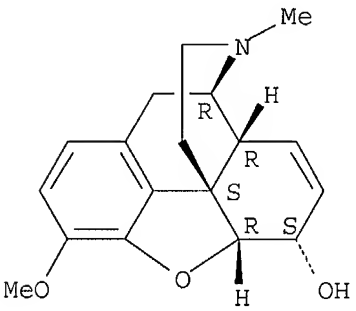
L5 ANSWER 7 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:164598 CAPLUS
DOCUMENT NUMBER: 120:164598
TITLE: Semisynthesis of codeine
AUTHOR(S): Phan, Dinh Chau; Do, Hiru Nghi
CORPORATE SOURCE: Ha Noi Pharm. Univ., Vietnam
SOURCE: Tap Chi Duoc Hoc (1993), (4), 15-16
CODEN: TCDHDQ; ISSN: 0258-6967
DOCUMENT TYPE: Journal
LANGUAGE: Vietnamese
AB Codeine (I) was prepared in 75 - 85% yield by methylation of the phenolic OH group of morphine with trimethylphenylammonium arylsulfonate. The quality of I meets all the stds. of the Vietnamese Pharmacopeia.
IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl- (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



IT **76-57-3P**, Codeine
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of, method for)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L5 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:198876 CAPLUS
DOCUMENT NUMBER: 112:198876
TITLE: An improved process for the preparation of codeine from morphine
INVENTOR(S): Ayyangar, Nagaraj Ramanuj; Choudhary, Anil Ramkumar; Kalkote, Uttam Ramrao; Sharma, Vasant Kaushal
PATENT ASSIGNEE(S): Council of Scientific and Industrial Research, India
SOURCE: Indian, 10 pp.
CODEN: INXXAP
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

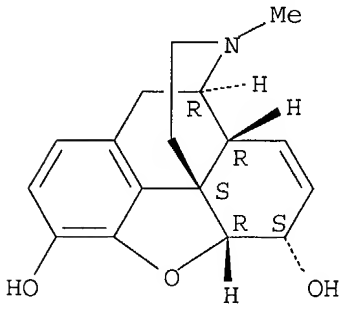
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 164587	A	19890415	IN 1986-DE109	19860205
PRIORITY APPLN. INFO.:			IN 1986-DE109	19860205

AB Codeine (I), useful as an analgesic and antitussive, is prepared by methylation of morphine (II) with PhN+Me3 Cl- (III) in the presence of alkali metal carbonate in a hydrocarbon solvent at 45-120°. II of very low purity of 30 to 95% containing gums and resins can be directly used for the process and the yield of I is quant. and therefore the process minimizes the production cost. Thus, II (89.0% purity) 320, K2CO3 552 and III

188 parts were heated 2-5 h at 45-120° under stirring in PhMe. The reaction mixture was filtered, PhMe distilled off, acidified to pH 5-5.5, and steam-distilled to remove PhNMC2. On basification I (99% purity) was separated in 99% yield.

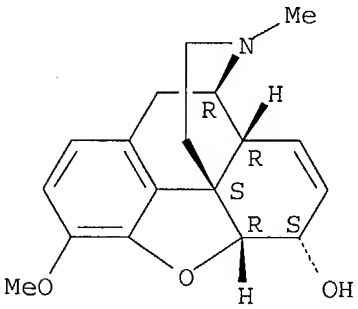
IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, by trimethylphenylammonium chloride)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



IT **76-57-3P**, Codeine
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(prepn of, by methylation of morphine with trimethylphenylammonium chloride)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-,
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L5 ANSWER 9 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER:	1989:24125 CAPLUS
DOCUMENT NUMBER:	110:24125
TITLE:	Improved process for the preparation of codeine from morphine
INVENTOR(S):	Ayyangar, Nagaraj Ramanuj; Choudhary, Anil Ramkumar; Kalkote, Uttam Ramrao; Sharma, Vasant Kaushal
PATENT ASSIGNEE(S):	Council of Scientific and Industrial Research, India
SOURCE:	Eur. Pat. Appl., 6 pp. CODEN: EPXXDW
DOCUMENT TYPE:	Patent
LANGUAGE:	English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 268710	A1	19880601	EP 1986-309180	19861125
EP 268710	B1	19910515		
R: AT, CH, DE, FR, GB, LI, NL				
AT 63554	E	19910615	AT 1986-309180	19861125
US 4764615	A	19880816	US 1986-940517	19861210
PRIORITY APPLN. INFO.:			EP 1986-309180	19861125

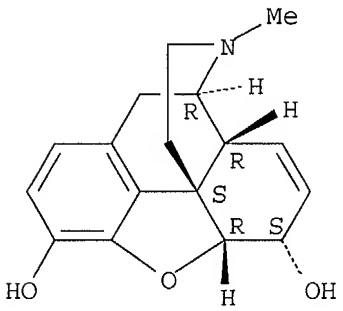
OTHER SOURCE(S): CASREACT 110:24125

AB Codeine (I) was prepared from morphine (II) by reaction with Me3PhN+ Cl- in the presence of an alkali metal carbonate and a hydrocarbon solvent at 45-120°. II (35% purity), K2CO3, and Me3PhN+ Cl- were stirred 2-5 h in PhMe at 45-120° to give 99% I.

IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, by trimethylphenylammonium chloride)

RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

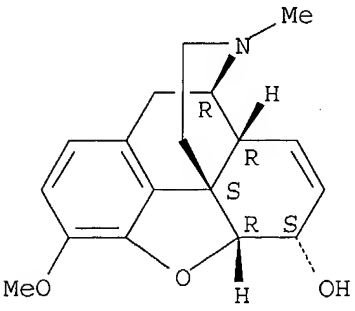
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**, Codeine
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of)

RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

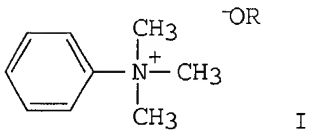
Absolute stereochemistry.



ACCESSION NUMBER: 1988:438019 CAPLUS
DOCUMENT NUMBER: 109:38019
TITLE: Preparation of codeine by methylation of morphine
INVENTOR(S): Snuparek, Vladislav
PATENT ASSIGNEE(S): Czech.
SOURCE: Czech., 3 pp.
CODEN: CZXXA9
DOCUMENT TYPE: Patent
LANGUAGE: Slovak
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 235590	B1	19850515	CS 1983-7601	19831017

PRIORITY APPLN. INFO.: CS 1983-7601 19831017
OTHER SOURCE(S): CASREACT 109:38019
GI



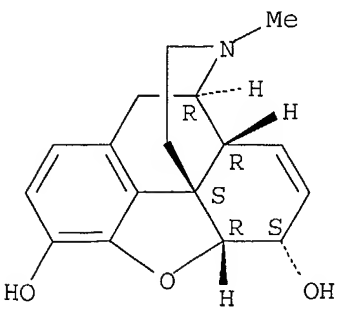
I

AB Codeine is prepared by methylation of morphine with the quaternary ammonium compound I (R = H, Me, Et). A 10-50 weight% solution of I in MeOH or EtOH is added to a suspension of morphine in xylene preheated to 110-125°, temperature is maintained at 100-115°, and the reaction is finished by heating to 115°. The procedure is suitable for industrial manufacture of codeine, an antitussive. Morphine was suspended in 1000 mL xylene and the stirred suspension was heated at 115° whereupon a solution of 88.6 g I (R = H) in 220 mL MeOH was gradually added during 90 min at 105-110° followed by heating at 115° to give 98% codeine.

IT **57-27-2**, Morphine, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, with phenyltrimethylammonium salt)

RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

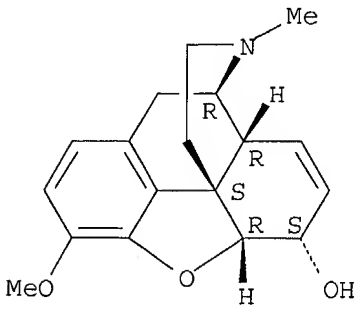
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**, Codeine
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of, by methylation of morphine)

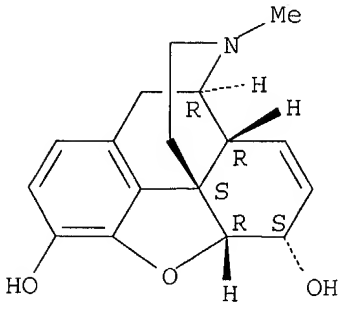
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



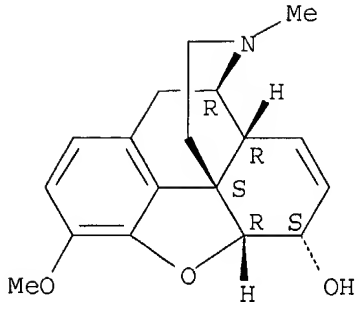
L5 ANSWER 11 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1985:471568 CAPLUS
DOCUMENT NUMBER: 103:71568
TITLE: A study of the phenolic oxidative coupling reaction in the synthesis of morphine alkaloids
AUTHOR(S): Vanderlaan, Douglas George
CORPORATE SOURCE: Florida State Univ., Tallahassee, FL, USA
SOURCE: (1984) 105 pp. Avail.: Univ. Microfilms Int., Order No. DA8428711
From: Diss. Abstr. Int. B 1985, 45(11), 3512
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable
IT **57-27-2P**, reactions **76-57-3P**
RL: **RCT (Reactant)**; SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(formal synthesis of, via phenolic oxidative coupling)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

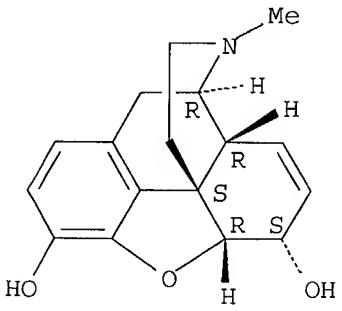


L5 ANSWER 12 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1984:139410 CAPLUS
DOCUMENT NUMBER: 100:139410
TITLE: Identification and determination of by-products of the codeine synthesis
AUTHOR(S): Proksa, B.; Cerny, J.
CORPORATE SOURCE: Slovakofarma, Hlohovec, 920 27, Czech.
SOURCE: Chemicke Zvesti (1983), 37(6), 837-42
CODEN: CHZVAN; ISSN: 0366-6352
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 100:139410

AB N,N,N',N'-Tetramethyl-4,4'-diaminodiphenylmethane, 6-methylcodeine, 17-norcodeine, α-codeimethine, and (3E)-O-dichlorovinylmorphine were found in the crude codeine obtained from morphine by methylation with trimethylphenylammonium hydroxide. A liquid-chromatog. method, employing column packed with reverse C-18-type phase, or alternatively gas-chromatog. one on XE-60/Chromaton N AW-DMCC were worked out for determination of these products.

IT **57-27-2**, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, codeine from, byproducts from)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

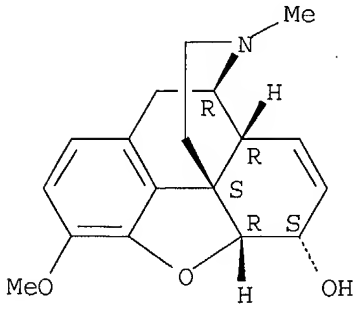
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(synthesis of, by methylation of morphine, byproducts from)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-,

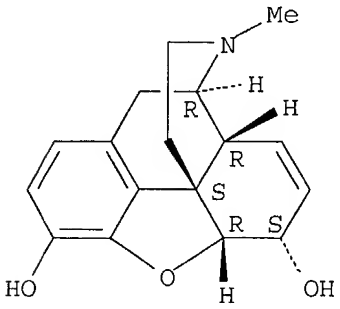
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L5 ANSWER 13 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:514776 CAPLUS
DOCUMENT NUMBER: 93:114776
TITLE: Semisynthesis of codeine
AUTHOR(S): Tran Nguyen Huu; Bui Le My; Nguyen Lan Phuong; Nguyen Huu Dinh
CORPORATE SOURCE: Xi Nghiep Duoc Pham 2, Hanoi, Vietnam
SOURCE: Duoc Hoc (1979), (2), 21-2
CODEN: DCHCAM
DOCUMENT TYPE: Journal
LANGUAGE: Vietnamese
AB The semisynthesis of codeine (70-90% yield) was performed by methylation of morphine with a methylating agent obtained by ion exchange of a quaternary ammonium salt (TMC) prepared at room temperature TMC behaves similarly to PhMe3N+ Cl-. Optimum conditions were found to stop the methylation reaction before the formation of thebaine.
IT **57-27-2**, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, to codeine)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

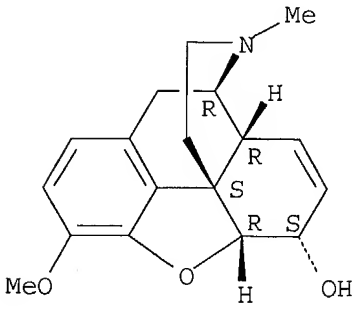
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(semisynthesis of, by methylation of morphine)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-,

(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



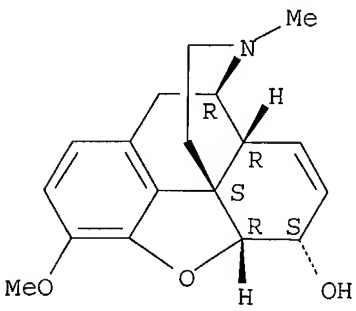
L5 ANSWER 14 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1974:48216 CAPLUS
DOCUMENT NUMBER: 80:48216
TITLE: Selective methylating agent
INVENTOR(S): Sistare Noguera, Jose
PATENT ASSIGNEE(S): Union Quimico-Farmaceutica S.A.E.
SOURCE: Span., 6 pp.
CODEN: SPXXAD
DOCUMENT TYPE: Patent
LANGUAGE: Spanish
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
ES 389682	A1	19730616	ES 1971-389682	19710329
PRIORITY APPLN. INFO.:			ES 1971-389682	19710329

AB Morphine was treated with RN:C(OMe)NHR (I; R = alkyl, aryl) in MeOH to give codeine. I was prepared by reaction of RN:C:NR with MeOM (M = alkaline earth metal) in absolute MeOH.

IT **76-57-3P**
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

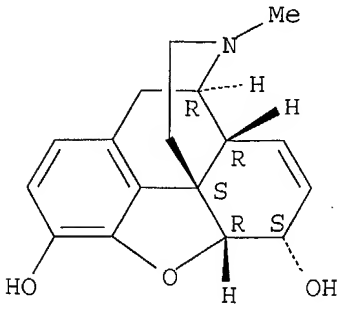
Absolute stereochemistry.



IT **57-27-2**, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)

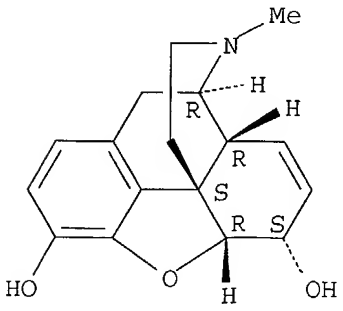
(methylation of, selective)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (-).



L5 ANSWER 15 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1973:537324 CAPLUS
DOCUMENT NUMBER: 79:137324
TITLE: Preparation of codeine by methylation of morphine with phenyltrimethylammonium methoxide
AUTHOR(S): Ikonomovski, Kostantin
CORPORATE SOURCE: S. B. Penick Co., Newark, NJ, USA
SOURCE: Acta Pharmaceutica Jugoslavica (1973), 23(3), 169-71
CODEN: APJUA8; ISSN: 0001-6667
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB Morphine (I; R = H) reacted with PhMe3N+ MeO- in xylene-MeOH at 115° to give 98% codeine (I; R = Me).
IT **57-27-2**, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of, by trimethylphenylammonium methoxide)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

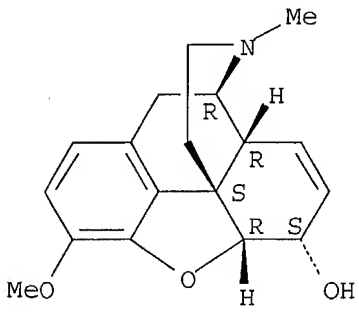
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of)
RN 76-57-3 CAPLUS
CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-,

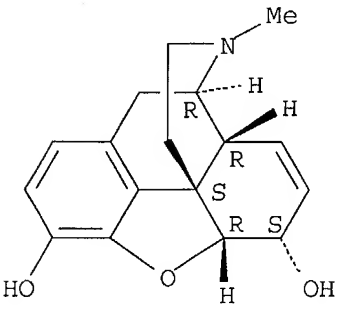
(5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L5 ANSWER 16 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1972:501952 CAPLUS
DOCUMENT NUMBER: 77:101952
TITLE: Improvement in the technology of codeine synthesis from morphine
AUTHOR(S): Smirnov, D. M.; Sigal, E. L.; Marechek, K. Ya.; Zakharov, V. P.
CORPORATE SOURCE: Khim.-Farm. Zavod im. Dzerzhinskogo, Chimkent, USSR
SOURCE: Khimiko-Farmatsevticheskii Zhurnal (1972), 6(5), 31-6
CODEN: KHFZAN; ISSN: 0023-1134
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Replacing PhMe as a solvent for the methylation of morphine using PhNMe3OH with C6H4Me2 enables one to perform the reaction at a lower temperature (102-5°, compared with 110-13°) in a shorter time (45 min instead of 90). A very pure codeine was obtained in a yield higher than 5%.
IT **57-27-2**, reactions
RL: **RCT (Reactant)**; RACT (Reactant or reagent)
(methylation of)
RN 57-27-2 CAPLUS
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-
(5α,6α)- (9CI) (CA INDEX NAME)

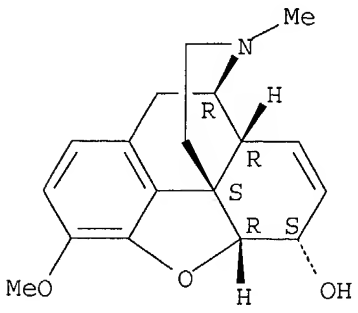
Absolute stereochemistry. Rotation (-).



IT **76-57-3P**
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(synthesis of)
RN 76-57-3 CAPLUS

CN Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-, (5α,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.




```
=> d his

     (FILE 'HOME' ENTERED AT 17:07:17 ON 19 OCT 2004)

     FILE 'REGISTRY' ENTERED AT 17:08:31 ON 19 OCT 2004
L1             1 S CODEINE/CN
L2             1 S MORPHINE/CN

     FILE 'CAPLUS' ENTERED AT 17:09:16 ON 19 OCT 2004
L3           120 S L1/PREP
L4           349 S L2/RCT
L5            16 S L3 AND L4

=> d l1
YOU HAVE REQUESTED DATA FROM FILE 'REGISTRY' - CONTINUE? (Y)/N:y


L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2004 ACS on STN
RN   76-57-3  REGISTRY
CN   Morphinan-6-ol, 7,8-didehydro-4,5-epoxy-3-methoxy-17-methyl-,
     (5α,6α)- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Morphinan-6α-ol, 7,8-didehydro-4,5α-epoxy-3-methoxy-17-methyl-
     (8CI)
OTHER NAMES:
CN   (-)-Codeine
CN   Codeine
CN   Codicept
CN   Coducept
CN   l-Codeine
CN   Methylmorphine
CN   Morphine 3-methyl ether
CN   Morphine monomethyl ether
CN   O3-Methylmorphine
FS   STEREOSEARCH
DR   120210-43-7, 79990-78-6
MF   C18 H21 N O3
CI   COM
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,
       CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*,
```

DIOGENES, DRUGU, EMBASE, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IMSCOSEARCH, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PROMT, PS, RTECS*, SPECINFO, TOXCENTER, USAN, USPAT2, USPATFULL, VETU
(*File contains numerically searchable property data)
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)

DT.CA CAplus document type: Book; Conference; Dissertation; Journal; Patent; Report

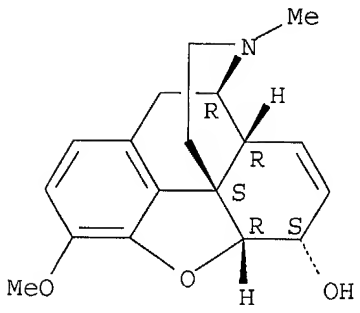
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.P Roles for non-specific derivatives from patents: ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)

RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)

RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); USES (Uses)

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

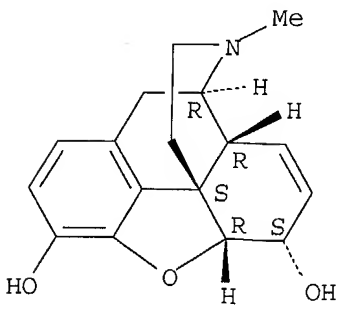
5103 REFERENCES IN FILE CA (1907 TO DATE)
66 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
5123 REFERENCES IN FILE CAPLUS (1907 TO DATE)
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> d l2
YOU HAVE REQUESTED DATA FROM FILE 'REGISTRY' - CONTINUE? (Y)/N:y

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2004 ACS on STN
RN 57-27-2 REGISTRY
CN Morphinan-3,6-diol, 7,8-didehydro-4,5-epoxy-17-methyl-(5α,6α)- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Morphinan-3,6α-diol, 7,8-didehydro-4,5α-epoxy-17-methyl- (8CI)
OTHER NAMES:
CN (-)-Morphine
CN Dulcontin
CN Duromorph

CN 1-Morphine
CN Meconium
CN Morphia
CN Morphin
CN Morphina
CN **Morphine**
CN Morphinism
CN Morphinum
CN Morphium
CN MS Contin
CN Nepenthe
CN Ospalivina
FS STEREOSEARCH
DR 8053-16-5, 85201-37-2, 47106-99-0
MF C17 H19 N O3
CI COM
LC STN Files: ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DRUGU, EMBASE, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IMSCOSEARCH, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PHAR, PIRA, PROMT, PS, RTECS*, SPECINFO, TOXCENTER, USAN, USPAT2, USPATFULL, VETU
(*File contains numerically searchable property data)
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)
DT.CA CAplus document type: Book; Conference; Dissertation; Journal; Patent; Report
RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)
RLD.P Roles for non-specific derivatives from patents: ANST (Analytical study); BIOL (Biological study); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)
RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses); NORL (No role in record)
RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)

Absolute stereochemistry. Rotation (-).



10/849,696

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

24946 REFERENCES IN FILE CA (1907 TO DATE)
267 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
24977 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=>

PALM INTRANET

Day : Tuesday
Date: 10/19/2004
Time: 16:47:52

Inventor Name Search Result

Your Search was:

Last Name = FRANCIS
First Name = CHARLES

Application#	Patent#	Status	Date Filed	Title	Inventor Name 23
60481270	Not Issued	159	08/20/2003	APPARATUS FACILITATING WALKING IN SKI BOOTS	FRANCIS, CHARLES JELINEK
60399226	Not Issued	159	07/25/2002	APPARATUS FACILITATING WALKING IN SKI BOOTS	FRANCIS, CHARLES JELINEK
60294470	Not Issued	159	05/30/2001	CONTACT LENS WITH PVA COVER LAYER	FRANCIS, CHARLES AUXILIUM
60257583	Not Issued	159	12/22/2000	CONTACT LENS WITH OPAQUE IRIS PATTERN	FRANCIS, CHARLES AUXILIUM
60107383	Not Issued	159	11/06/1998	METHOD TO IMPROVE CIRCULATION TO ISCHEMIC TISSUE	FRANCIS , CHARLES W
10892578	Not Issued	019	07/16/2004	PROCESS FOR MANUFACTURING OPIOID ANALGESICS	FRANCIS, CHARLES AUXILIUM
10850015	Not Issued	030	05/20/2004	PROCESS FOR THE PRODUCTION OF OPIATES	FRANCIS, CHARLES A.
10849696	Not Issued	030	05/20/2004	PROCESS FOR THE PRODUCTION OF OPIATES	FRANCIS, CHARLES A.
10813813	Not Issued	041	03/31/2004	PROCESS FOR MANUFACTURING THEBAINE	FRANCIS, CHARLES AUXILIUM
10692242	Not Issued	030	10/23/2003	PROCESS FOR PREPARING CODEINE	FRANCIS, CHARLES A.
10455202	Not Issued	092	06/05/2003	PROCESS FOR MANUFACTURING OXYCODONE	FRANCIS, CHARLES AUXILIUM

10455197	6790959	150	06/05/2003	PROCESS FOR MANUFACTURING THEBAINE	FRANCIS, CHARLES AUXILIUM
10152942	Not Issued	071	05/22/2002	CONTACT LENS WITH PVA COVER LAYER	FRANCIS, CHARLES AUXILIUM
10017026	Not Issued	161	12/14/2001	CONTACT LENS WITH OPAQUE IRIS PATTERN	FRANCIS, CHARLES AUXILIUM
09435286	Not Issued	041	11/05/1999	METHOD TO IMPROVE CIRCULATION TO ISCHEMIC TISSUE	FRANCIS , CHARLES W.
09260098	Not Issued	161	03/02/1999	THERAPEUTIC MATERIAL CONTAINING GROWTH FACTOR BOUND TO FIBRINOGEN OR TO FIBRIN	FRANCIS , CHARLES W.
07499250	5206140	150	03/26/1990	ASSAY FOR SOLUBLE CROSSLINKED FIBRIN POLYMERS	FRANCIS , CHARLES W.
07366631	5024475	250	06/05/1989	STRENGTHENING DOOR JAMB	FRANCIS , CHARLES E.
07299791	4899416	150	01/23/1989	WIND POWERED CLEANING AND POLISHING FLAP FOR BOAT RAILS	FRANCIS , CHARLES
07213572	Not Issued	161	06/24/1988	ASSAY FOR SOLUBLE CROSSLINKED FIBRIN POLYMERS	FRANCIS , CHARLES W.
07197444	4865370	150	05/23/1988	KEEPER FOR DEADBOLT LOCKS	FRANCIS , CHARLES E.
06944933	Not Issued	161	12/22/1986	KEEPER FOR DEADBOLT LOCKS	FRANCIS , CHARLES E.
06800696	Not Issued	161	11/22/1985	KEEPER FOR DEADBOLT LOCKS	FRANCIS , CHARLES E.

Inventor Search Completed: No Records to Display.

Search Another: Inventor

Last Name Francis **First Name** Charles

Search

To go back use Back button on your browser toolbar.

Back to PALM | ASSIGNMENT | OASIS | Home page